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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,667

11/20/2006

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4836-21/NP

4291

27572 7590 04/01/2009  
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EXAMINER

AUSTIN, AARON

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

04/01/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,667	<b>Applicant(s)</b> BARTSCH ET AL.	
	<b>Examiner</b> AARON S. AUSTIN	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-7, 11 and 13-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In particular, claims 1, 13 and 15 require the ceramic coating be free of aluminum oxide. This element of the claims is considered a negative limitation unsupported by the specification. Any negative limitation or exclusionary proviso must have basis in the original disclosure. The mere absence of a positive recitation is not basis for exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. See MPEP 2173.05(i).

Regarding claim 14, line 4 requires a thickness of less than 50 mm. The value of 50 mm is not present in the specification and thus is considered new matter. Appropriate correction is required.

The remaining claims are rejected as being dependent on a rejected base claim.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, claim 15 requires the coating is “essentially free of aluminum oxide” while being dependent on claim 13 which requires the coating is “free of aluminum oxide”. Thus claim 15 is broader than the claim upon which it depends. Thus the metes and bounds of claim 15 are indeterminable as it is unclear as to which range of aluminum oxide is present, thereby rendering the claim indefinite.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Rigney et al. (US 6,455,167).

Rigney et al. teach a turbine airfoil under thermal and mechanical stress with a protective coating to combat oxidation, corrosive attack, and undesirable interactions between the substrate and bond coat (column 5, lines 41-48). The protective coating is made by applying to a metallic component 32 a thin diffusion barrier layer 33 comprised

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of oxidic ceramic material (column 5, lines 14-16 and 46). The thickness of the ceramic diffusion barrier layer 33 may be 1-10 microns (column 5, lines 14-16).

Regarding claims 1-2, 5, 7-8, and 14 the thickness of the ceramic diffusion barrier layer may be 1-10 microns (column 5, lines 14-16).

Regarding claims 3-4 and 14, a pre-bond coat 39, such as an aluminum containing aluminide, may be applied to the metallic component prior to application of the diffusion barrier layer 33 (column 6, lines 63-64). The pre-bond coat is expected to provide oxidation protection as like materials to those claimed are used in a like manner.

Regarding claim 6, the ceramic coating material may consist of an oxidic ceramic material (column 5, line 46).

Regarding claim 9, the ceramic coating may be produced by EB-PVD (column 7, line 41).

Regarding claim 10, the ceramic coating may be produced by CVD (column 7, line 40).

Regarding claims 13 and 15, the oxidic material comprising the diffusion barrier layer need not include alumina (column 5, line 46).

Claims 1-4, 6-9, and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ulion et al. (US 5,262,245).

Ulion et al. teach a superalloy turbine engine component under thermal and mechanical stress including a metallic superalloy substrate component to which is

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applied a ceramic coating (e.g., claim 1). The thickness of the ceramic coating may be 25 to 500 microns (e.g., claim 2 and column 6, lines 14-18).

Regarding claims 1-2, 7-8, and 14, the thickness of the ceramic coating may be 25 to 500 microns (e.g., claim 2 and column 6, lines 14-18).

Regarding claims 3-4 and 14, an alumina layer is applied to the metallic component prior to application of the ceramic coating. The alumina layer is expected to provide some level of oxidation protection as it serves to separate and insulate the metallic substrate from oxidizing forces. Further, the alumina layer is expected to provide oxidation protection as like materials to those claimed are used in a like manner.

Regarding claims 6, 13, and 15, the ceramic coating material may consist of yttria stabilized zirconia which is an oxidic ceramic material (column 6, lines 22-23).

Regarding claim 9, the ceramic coatings may be produced by EB-PVD (column 6, line 32).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rigney et al. (US 6,455,167).

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Rigney et al. teach a coating for a turbine airfoil as described above. Rigney et al. do not specifically teach the airfoil is part of a rotor or stator. However, airfoils are generally parts of rotor and stator turbine components (e.g., rotor and stator blades). In the alternative, it would be obvious to apply the coating to other rotor and stator components to one of ordinary skill in the art to obtain the benefits of resistance to turbine environmental stresses. Further, forming airfoils and other components of rotors and stators of the same materials and coatings negates changes in thermal expansion that could otherwise cause failure when subjected to the high heats of the turbine environment. Thus one of ordinary skill in the art is provided motivation to coat rotor and/or stator components, including airfoils, with the same coating to reduce the risk of failure due to differences in rates of thermal expansion.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ulion et al. (US 5,262,245).

Ulion et al. teach a coated turbine engine component as described above.

Ulion et al. do not teach the turbine engine component as being a rotor or stator.

However, Ulion et al. do teach application to components throughout a turbine engine requiring thermal barrier protection (column 1, lines 10-68). As rotors and stators are under thermal stress in a turbine engine, it would be obvious to one of ordinary skill in the art to apply the taught thermal barrier coating to rotors and/or stators.

***Response to Arguments***

Applicant's arguments, see the Remarks, filed 12/12/08, with respect to the previous rejections under 35 USC 101, under 35 USC 112 second paragraph, and under 35 USC 102(b) over the Lorimar et al. reference, as well as the objections of claims 8-10, have been fully considered and are persuasive in light of the present amendments. These rejections and objections have been withdrawn.

Applicant's arguments filed with respect to the rejections over the Rigney et al. and Ulion et al. references have been fully considered but they are not persuasive.

In response to applicant's argument that the Rigney et al. and Ulion et al. references are not directed toward coatings used to prevent rumpling of the metallic components, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the present case, the references teach a method of formation with materials and steps overlapping the claim language as set forth above. Therefore, as like materials are used in a like manner, the coatings provided by the references are considered to be capable of performing the taught rumple prevention.



***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **AARON S. AUSTIN** whose telephone number is (571)272-8935. The examiner can normally be reached on Monday-Friday: 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John J. Zimmerman/  
Primary Examiner, Art Unit 1794

/Aaron S Austin/  
Examiner, Art Unit 1794